

Cost-effectiveness analysis of pulse oximetry in primary care management of acute respiratory tract infection in rural northern Thailand

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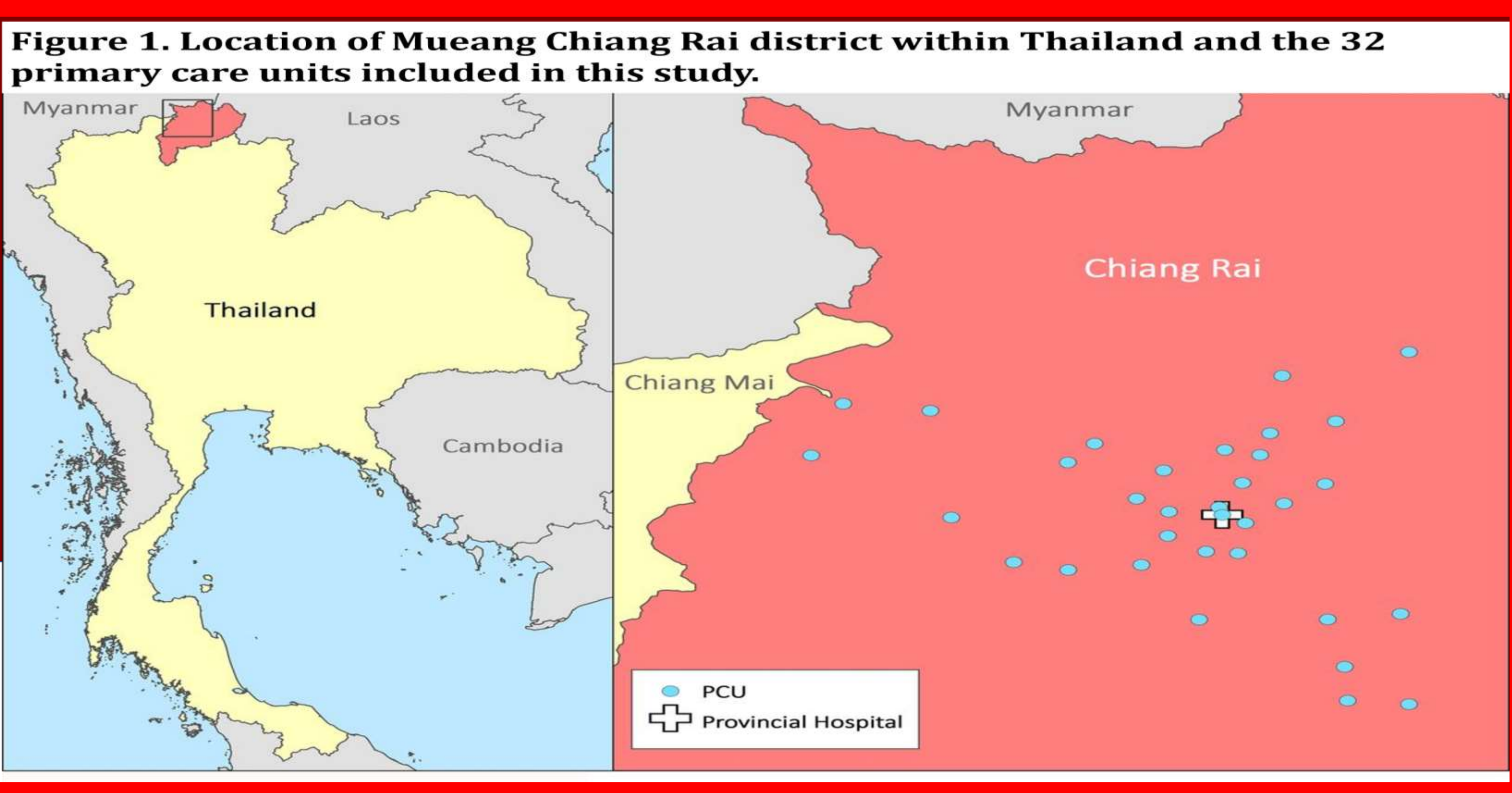
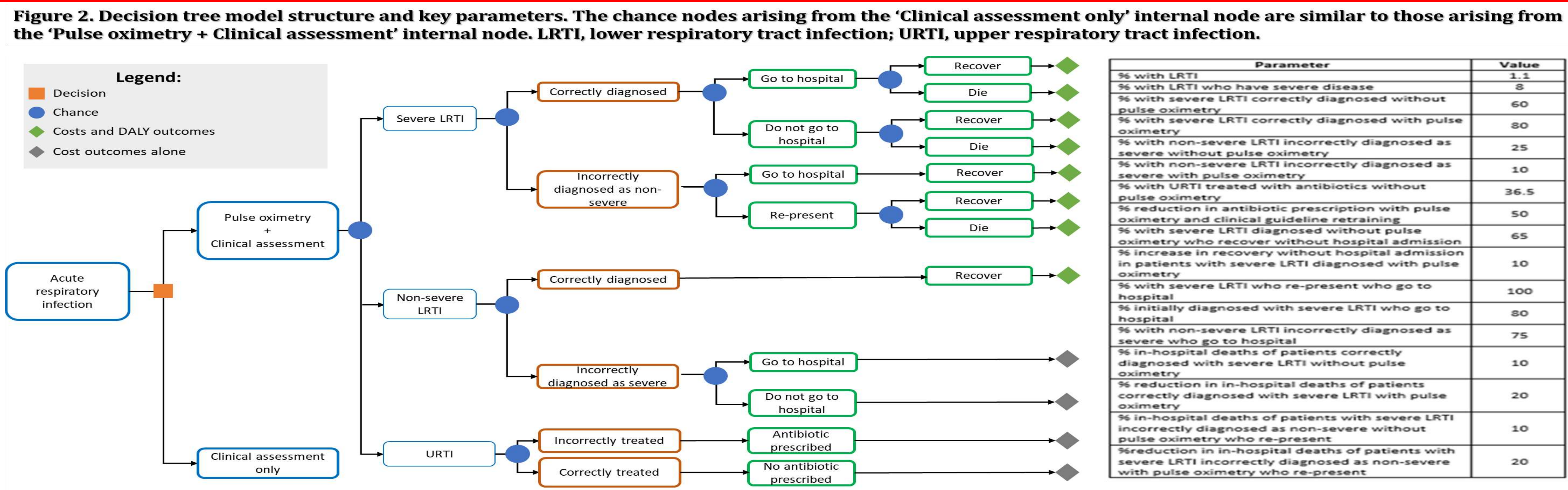
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AIM

- To model the cost-effectiveness of pulse oximetry in the management of acute respiratory tract infection (RTI) in rural primary care units in Chiang Rai province, Thailand (Fig. 1).

METHODS

- Decision tree models (Fig. 2) with a 1-year time horizon were constructed for children <5 years, children 5–14 years, and adults, and varied in 4 deterministic sensitivity analyses.
- Parameters were based on data from 49,958 patients from a review of acute infection management in the primary care units, procurement price lists, and published studies.
- The clinical outcomes of interest were antibiotic prescription for upper RTI and death from severe lower RTI.



RESULTS

- In children <5 years, 2.0 DALYs were averted each year, dominating standard care when direct and indirect costs were considered (Thai cost-effectiveness threshold \$8,624).
- Extending pulse oximetry to all age groups resulted in 0.7 and 0.9 DALYs averted annually in children 5-14 years and adults, respectively. The yearly cost saving if clinical assessment of all patients with ARI were supplemented with pulse oximetry was \$90,550.
- The dominance of pulse oximetry was maintained in the sensitivity analyses, which used increasingly conservative assumptions regarding its performance and benefits.

CONCLUSIONS

- Pulse oximetry is a cost-effective adjunct for managing acute RTI in rural northern Thailand, and likely in settings with similar epidemiology, supporting the WHO recommendation that pulse oximetry be implemented for children <5 years.
- The models also suggest that pulse oximetry is cost-effective in other patient categories; therefore, further clinical studies of pulse oximetry in older children and adults are merited.